### **BEST AVAILABLE COPY**



WORLD INTELLECTUAL PROPERTY ORGANIZATION International Bureau



| (51) International Patent Classification <sup>5</sup> ;<br>C12Q 1/68, C12P 19/34<br>C07H 21/04   | А3   | (11) International Publication Number: WO 91/13075 (43) International Publication Date: 5 September 1991 (05.09.91)   |
|--|--|---|
| (21) International Application Number: PCT/FI (22) International Filing Date: 15 February 1991 (30) Priority data: 482,005 16 February 1990 (16.02. (71) Applicant: ORION-YHTYMÄ OY [FI/FI]; Ori SF-02100 Espoo (FI). (72) Inventors: SÖDERLUND, Hans; Salonkitie 19, Espoo (FI). SYVÄNEN, Ann-Christine; M mintie 138 A 11, SF-00270 Helsinki (FI). (74) Agent: ORION CORPORATION; Orion Pharm Patent Department, P.O. Box 65, SF-02101 Esp | (15.02.9<br>90) Unintie  | pean patent), CA, CH (European patent), DE (European patent), DK (European patent), ES (European patent), FI, FR (European patent), GB (European patent), GR (European patent), IT (European patent), JP, LU (European patent), NL (European patent), NO, SE (European patent).  Published  With international search report.  Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.  (88) Date of publication of the International search report: |
| By selecting the detection step primers from the region<br>tected after incorporation of as few as one nucleoside<br>cleotide are added and the incorporation of a label into<br>primer is important to the method according to this in  | primer<br>n imme<br>triphos<br>to the d<br>vention<br>ne regio | stension and incorporation of detectable nucleoside triphosphates liately adjacent to the variable nucleotide, this variation can be de thate. Labelled nucleoside triphosphates matching the variable nutection step primer is measured. The selection of the detection step and is dependent on the nucleotide sequence of interest. The detection mediately toward the 3' end from the variable nucleotide to be   |

## FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

| appiic | ations under the corr    |    |                              | MG | Madagascar               |
|--------|--------------------------|----|------------------------------|----|--------------------------|
|        |                          | ES | Spain                        | ML | Mali                     |
| AT     | Austria                  | FI | Finland                      | MN | Mongolia                 |
| AU     | Australia                | FR | France                       | MR | Mauritania               |
| 88     | Barbados                 | GA | Gahon                        | MW | Malawi                   |
| BE     | Belgium                  | GB | United Kingdom               | NL | Netherlands              |
| BP     | Burkina Faso             | GN | Guinça                       | NO | Norway                   |
| BG     | Bulgaria                 | GR | Greece                       | PL | Poland                   |
| BJ     | Benin                    | HU | Hungary                      | RO | Romania                  |
| BR     | Brazit                   | 17 | Italy                        | SD | Sudan                    |
| CA     | Canada                   | JP | leane                        | SÉ | Sweden                   |
| CF     | Central African Republic | KP | Democratic People's Republic | SN | Senegal                  |
| CG     | Congo                    |    | of Korca                     | SU | Soviet Union             |
| CH     | Switzerland              | KR | Republic of Korea            | TD | Chad                     |
| CI     | Côte d'Ivoire            | LI | Liechtenstein                | TG | Tota                     |
| CM     | Cameroon                 | LK | Sri Lanta                    | US | United States of America |
| cs     | Chechoslovakia           | LU | Luxembourg                   | US | -                        |
| DE     | Germany                  | MC | Monaco                       |    |                          |
| DK     | Denmark                  | MC | 111011011                    |    |                          |

### BEST AVAILABLE COPY

#### INTERNATIONAL SEARCH REPORT

International Application No PCT/FI 91/00046

| I. CLASS   | IFICATION OF  | SUBJECT MATTER (If several classif  | ication symbols apply, indicate all) *   |  |
|--|---|---|--|--|
| According  | to International Pe   | stent Classification (IPC) or to both Natio   | onal Classification and IPC  |  |
| IPC <sup>5</sup> :   | C 12 Q 1,   | /68, C 12 P 19/34,  | C 07 H 21/04   |  |
| II. FIELDS   | BEARCHED  |   |  |  |
|  |   | Minimum Documen   | tation Searched 7  |  |
| Classification   | on System   |   | Classification Symbols   |  |
| IPC <sup>5</sup>   | c:  | 12 Q  |  |  |
|  |   | Documentation Searched other to the Extent that such Documents  | hen Minimum Documentation<br>are Included in the Fields Searched <sup>a</sup>  |  |
|  |   | •   |  |  |
| III. DOCU  | MENTS CONSI   | DERED TO BE RELEVANT  |  |  |
| Category *   |   | Document, 11 with Indication, where appr  | ropriate, of the relevant passages 12  | Relevant to Claim No. 13   |
| х, у   | wo,   | A, 89/10414 (WALLA<br>2 November 1989<br>see the whole docu<br>page 13, paragraph<br>claims 1,3,26  | ument, especially  | 1-18,32  |
| X,Y  | ₩O,   | A, 90/09455 (GENEC<br>23 August 1990<br>see the whole docu  | •  | 1-18,32  |
| х  | us,   | A, 4851331 (VARY 6<br>25 July 1989<br>see abstract; exam  | et al.) nple 3; claims 1-9   | 1  |
| Y  |   |   |  | 2-18,32  |
| Y  | EP,   | A, 0317074 (ORION<br>24 May 1989<br>see the whole docu  |  | 6-13,18  |
| x  | EP,   | A, 0123513 (AMERSHA)<br>31 October 1984<br>see abstract; page   | 1  |  |
| Y  |   |   | / <u>.</u>   | 2-18,32  |
| "A" doc<br>con<br>"E" earl<br>film<br>"L" doc<br>whi<br>cits<br>"O" doc<br>oth | sidered to be of plier document but ; ig date :ument which may ch is cited to esta tion or other spec- :ument referring to er means | s general state of the ert which is not articular relevance published on or after the international throw doubte on priority claim(s) or blish the publication date of another at reason (as specified) an oral disclosure, use, exhibition or trior to the international filing date but | "T" later document published after the priority date and not in conflicted to understand the principle invention.  "X" document of perticular relevant cannot be considered novel or involve an inventive step.  "Y" document of particular relevant cannot be considered to involve document is combined with one ments, such combination being of in the art.  "5" document member of the same p | ct with the application but a portion of the claimed invention cannot be considered to the claimed invention as inventive step when the or more other such docubivious to a person skilled |
|  | IFICATION   |   |  |  |
|  | • Actual Completic<br>.st May 1:  | on of the International Search  | Date of Mailing of this International Se<br>22, (18, 91  | arch Report  |
|  | nat Searching Auth  |   | Signature of Authorized Officer  | ·  |
|  |   | PATENT OFFICE   | Natalie Weinb  | era  |
|  |   |   |  |  |

#### international Application No PCT/FI 91/00046

|         | ENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET Citation of Document, 11 with Indication, where appropriate, of the relevant passages | Relevant to Claim No. |
|---------|---|-----------------------|
| egory * | Citation of Document, Wella Indication, where appropria   |                       |
| Y       | EP, A, 0370694 (CETUS CORP.) 30 May 1990 see the whole document   | 6-13,18               |
| Y       | EP, A, 0357011 (ABBOTT LABORATORIES) 7 March 1990 see the whole document  | 6-13,18               |
| A       | EP, A, 0332435 (IMPERIAL CHEMICAL INDUSTRIES) 13 September 1989 cited in the application  |                       |
|         |   |                       |
| A       | WO, A, 90/11372 (COLLABORATIVE RESEARCH INC.) 4 October 1990  |                       |
| A       | EP, A, 0333465 (BAYLOR COLLEGE OF<br>MEDICINE)<br>20 September 1989   |                       |
| A       | WO, A, 89/09835 (THE SALK INSTITUTE FOR<br>BIOLOGICAL STUDIES)<br>19 October 1989   |                       |
| P,X     | EP, A, 0371437 (ORION-YHTYMÄ OY) 6 June 1990 see the whole document   | 1                     |
| Y       |   | 5-13,18               |
| 1       |   |                       |
|         |   |                       |
|         |   |                       |
|         |   |                       |
|         |   |                       |
|         | ·   |                       |
|         | ·   |                       |
|         |   |                       |
|         |   |                       |
|         |   | ·                     |
|         |   |                       |
|         | . «   |                       |
|         |   |                       |

Form PCT/ISA 210(extra sheet) (January 1985)

### BEST AVAILABLE COPY

## ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.

FI 9100046

SA . 44729

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 17/07/91

The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s)       |   | Publication<br>date                          |
|---|---------------------|----------------------------------|---|--|
| WO-A- 8910414                             | 02-11-89            | AU-A-                            | 3694689                                   | 24-11-89                                     |
| WO-A- 9009455                             | 23-08-90            | None                             |   |  |
| US-A- 4851331                             | 25-07 <u>-</u> 89   | None                             |   |  |
| EP-A- 0317074                             | 24-05-89            | AU-A-<br>JP-A-                   | 2178188<br>1222800                        | 13-04-89<br>06-09-89                         |
| EP-A- 0123513                             | 31-10-84            | CA-A-<br>DE-A-<br>JP-A-<br>US-A- | 1219793<br>3469366<br>59208465<br>4656127 | 31-03-87<br>24-03-88<br>26-11-84<br>07-04-87 |
| EP-A- 0370694                             | 30-05-90            | CA-A-<br>JP-A-                   | 2002076<br>2299600                        | 21-05-90<br>11-12-90                         |
| EP-A- 0357011                             | 07-03-90            | AU-A-<br>JP-A-                   | 4028189<br>2174698                        | 08-03-90<br>06-07-90                         |
| EP-A- 0332435                             | 13-09-89            | AU-A-<br>JP-A-                   | 3124689<br>2042999                        | 14-09-89<br>13-02-90                         |
| WO-A- 9011372                             | 04-10-90            | AU-A-<br>AU-A-<br>WO-A-          | 5358990<br>5640090<br>9012115             | 22-10-90<br>05-11-90<br>18-10-90             |
| EP-A- 0333465                             | 20-09-89            | AU-A-<br>JP-A-                   | 3141289<br>2031699                        | 21-09-89<br>01-02-90                         |
| WO-A- 8909835                             | 19-10-89            | AU-A-                            | 3539089                                   | 03-11-89                                     |
| EP-A- 0371437                             | 06-06-90            | AU-A-<br>CA-A-<br>JP-A-          | 4574989<br>2004056<br>2219600             | 07-06-90<br>29-05-90<br>03-09-90             |

FORNI POLT

# BEST AVAILABLE COP: